

LISTING OF THE CLAIMS

The following listing of the claims replaces all prior claim listings and versions:

1. - 5. (Canceled)

6. (Currently Amended) A surgical instrument comprising:

an insertion section having a distal end portion and a proximal end portion, the insertion section comprising first and second driving rods which are disposed side by side and each of which has a distal end portion and a proximal end portion;

a pair of jaws disposed in the distal end portion of the insertion section;

a support which pivotally supports at least one jaw of the pair of jaws to be relatively opened/closed;

a sliding member which supports the at least one jaw of the pair of jaws being pivotally supported by the support, and which is slid in an axial direction of the support with respect to the support to relatively open/close the at least one jaw of the pair of jaws being pivotally supported by the support;

a connecting rod having a distal end portion and a proximal end portion, the sliding member being pivotally supported on the distal end portion of the connecting rod to open/close the pair of jaws, and the distal end portion of the first driving rod being pivotally supported on the proximal end portion of the connecting rod;

a rotation mechanism which rotatably supports the support on the distal end portion of the insertion section, and pivotally supports the support on the distal end portion of the second driving rod in a state of being offset with respect to a center axis of the support; and

an operation section disposed in the proximal end portion of the insertion section, which pivotally supports the proximal end portions of the first and second driving rods when the operation section is opened/closed and rotated, an opening/closing force by the opening/closing operation being transmitted from the proximal end portion to the distal end portion of the first driving rod to slide the sliding member on the support through the connecting rod thereby opening/closing the pair of jaws, and a rotating force by the rotation operation being transmitted

from the proximal end portion to the distal end portion of the second driving rod to apply a rotational force on the support to rotate the support on the distal end portion of the insertion section, thereby rotating the pair of jaws relatively with respect to the insertion section,

wherein the connecting rod has rigidity which opens/closes the pair of jaws for a biomedical tissue in a state where a rotational position of the pair of jaws with respect to the insertion section has been held to enable treatment of the biomedical tissue, and wherein the connecting rod is made of a metal material, and

wherein the first driving rod is arranged in a position of being offset with respect to a center axis of the insertion section,

the sliding member is arranged on a center axis of the support, and

when the insertion section and the support are arranged on the same axis, an axial direction of the connecting rod is inclined in an axial direction of the insertion section and the support, and,

wherein the sliding member has a circular-arc surface, and

a distal end portion of the connecting rod has an abutment surface which is abutted on the circular-arc surface of the sliding member.

7. (Original) The surgical instrument according to claim 6, wherein the abutment surface of the connecting rod has inclination in the axial direction of the connecting rod.

8. (Original) The surgical instrument according to claim 7, wherein the pair of jaws have treatment section opening/closing mechanisms which are opened oppositely to each other in the axial direction of the support.

9. (Previously Presented) The surgical instrument according to claim 8, wherein the treatment section opening/closing mechanisms comprise:

a first connection pin which supports a proximal end portion of one jaw of the pair of jaws at the distal end portion of the sliding member,

a second connection pin which supports another jaw of the pair of jaws to be opened/closed with respect to the one jaw of the pair of jaws, and
a regulation member which regulates a movement of the support.

10. (Currently Amended) The surgical instrument according to claim 2[.]

A surgical instrument comprising:

an insertion section having a distal end portion and a proximal end portion, the insertion section comprising a first driving rod and a second driving rod disposed side by side, each of the first driving rod and the second driving rod having a distal end portion and a proximal end portion;

a pair of jaws disposed in the distal end portion of the insertion section;

a support positioned to pivotally support at least one jaw of the pair of jaws to be opened/closed relative to the pair of jaws;

a sliding member supporting the at least one jaw of the pair of jaws and to slide in an axial direction of the support with respect to the support to relatively open/close the at least one jaw;

a connecting rod having a distal end portion and a proximal end portion, the sliding member being pivotally supported on the distal end portion of the connecting rod to open/close the pair of jaws, and the distal end portion of the first driving rod being pivotally supported on the proximal end portion of the connecting rod, the sliding member being supported at the distal end portion of the connecting rod such that the sliding member is pushed to slide in a distal direction to open the pair of jaws;

a rotation mechanism rotatably supporting the support on the distal end portion of the insertion section, and pivotally supporting the support on the distal end portion of the second driving rod in a state of being offset with respect to a center axis of the support; and

an operation section disposed in the proximal end portion of the insertion section, and pivotally supporting the proximal end portions of the first and second driving rods when the operation section is opened/closed and rotated, an opening/closing force by the opening/closing operation being transmitted from the proximal end portion to the distal end portion of the first

driving rod to slide the sliding member on the support through the connecting rod thereby opening/closing the pair of jaws, and a rotating force by the rotation operation being transmitted from the proximal end portion to the distal end portion of the second driving rod to apply a rotational force on the support to rotate the support on the distal end portion of the insertion section, thereby rotating the pair of jaws relatively with respect to the insertion section,

wherein the connecting rod has rigidity which opens/closes the pair of jaws for a biomedical tissue in a state where a rotational position of the pair of jaws with respect to the insertion section has been held to enable treatment of the biomedical tissue.

wherein the first driving rod is arranged in a position of being offset with respect to a center axis of the insertion section,

the sliding member is arranged on a center axis of the support[[,]]; and

when the insertion section and the support are arranged on the same axis, an end surface in an axial direction of the connecting rod is inclined in an axial direction of the insertion section and the support.

11. (Currently Amended) The surgical instrument according to claim 10, wherein the sliding member has a circular-arc surface, and

a distal end portion of the connecting rod has an abutment surface which is abutted on the circular-arc surface of the sliding member.

12. (Original) The surgical instrument according to claim 11, wherein the abutment surface of the connecting rod has inclination in the axial direction of the connecting rod.

13. (Original) The surgical instrument according to claim 12, wherein the pair of jaws have treatment section opening/closing mechanisms which are opened oppositely to each other in the axial direction of the support.

14. (Currently Amended) The surgical instrument according to claim 13, wherein the treatment section opening/closing mechanisms comprise:

a first connection pin which supports a proximal end portion of one jaw of the pair of jaws at the distal end portion of the sliding member[[],];

a second connection pin which supports another jaw of the pair of jaws to be opened/closed with respect to the one jaw of the pair of jaws[[],]; and

a regulation member which regulates a movement of the support.

15. (Currently Amended) ~~The surgical instrument according to claim 1[[],]~~
A surgical instrument comprising:

an insertion section having a distal end portion and a proximal end portion, the insertion section comprising a first driving rod and a second driving rod disposed side by side and each of which has a distal end portion and a proximal end portion;

a pair of jaws disposed in the distal end portion of the insertion section;

a support positioned to pivotally support at least one jaw of the pair of jaws to be opened/closed relative to the pair of jaws;

a sliding member which supports the at least one jaw of the pair of jaws and to slide in an axial direction of the support with respect to the support to relatively open/close the at least one jaw;

a connecting rod having a distal end portion and a proximal end portion, the sliding member being pivotally supported on the distal end portion of the connecting rod to open/close the pair of jaws, and the distal end portion of the first driving rod being pivotally supported on the proximal end portion of the connecting rod, the sliding member being supported at the distal end portion of the connecting rod such that the sliding member is pushed to slide in a distal direction to open the pair of jaws;

a rotation mechanism which rotatably supports the support on the distal end portion of the insertion section, and pivotally supports the support on the distal end portion of the second driving rod in a state of being offset with respect to a center axis of the support; and

an operation section disposed in the proximal end portion of the insertion section, and pivotally supporting the proximal end portions of the first and second driving rods when the operation section is opened/closed and rotated, an opening/closing force by the opening/closing operation being transmitted from the proximal end portion to the distal end portion of the first driving rod to slide the sliding member on the support through the connecting rod thereby opening/closing the pair of jaws, and a rotating force by the rotation operation being transmitted from the proximal end portion to the distal end portion of the second driving rod to apply a rotational force on the support to rotate the support on the distal end portion of the insertion section, thereby rotating the pair of jaws relatively with respect to the insertion section,

wherein the pair of jaws have treatment section opening/closing mechanisms which are opened oppositely to each other in the axial direction of the support.

16. (Previously Presented) The surgical instrument according to claim 15, wherein the treatment section opening/closing mechanisms comprise:

a first connection pin which supports a proximal end portion of one jaw of the pair of jaws at the distal end portion of the sliding member,
a second connection pin which supports another jaw of the pair of jaws to be opened/closed with respect to the one jaw of the pair of jaws, and
a regulation member which regulates a movement of the support.

17. - 25. (Canceled)

26. (Currently Amended) A surgical instrument comprising:

an insertion section having a distal end portion and a proximal end portion, the insertion section comprising first and second driving rods which are disposed side by side and each of which has a distal end portion and a proximal end portion;

a pair of jaws disposed in the distal end portion of the insertion section;
a support which pivotally supports at least one jaw of the pair of jaws to be relatively opened/closed;

a sliding member which supports the at least one jaw of the pair of jaws being pivotally supported by the support, and which is slid in an axial direction of the support with respect to the support to relatively open/close the at least one jaw of the pair of jaws being pivotally supported by the support;

a connecting rod having a distal end portion and a proximal end portion, the sliding member being pivotally supported on the distal end portion of the connecting rod to open/close the pair of jaws, and the distal end portion of the first driving rod being pivotally supported on the proximal end portion of the connecting rod;

a rotation mechanism which rotatably supports the support on the distal end portion of the insertion section, and pivotally supports the support on the distal end portion of the second driving rod in a state of being offset with respect to a center axis of the support; and

an operation section disposed in the proximal end portion of the insertion section, which pivotally supports the proximal end portions of the first and second driving rods when the operation section is opened/closed and rotated, an opening/closing force by the opening/closing operation being transmitted from the proximal end portion to the distal end portion of the first driving rod to slide the sliding member on the support through the connecting rod thereby opening/closing the pair of jaws, and a rotating force by the rotation operation being transmitted from the proximal end portion to the distal end portion of the second driving rod to apply a rotational force on the support to rotate the support on the distal end portion of the insertion section, thereby rotating the pair of jaws relatively with respect to the insertion section,

wherein the operation section has an operation section main body which comprises a distal end portion and a proximal end portion, through which the first and second driving rods are inserted, the distal end portion of the operation section main body being connected to the proximal end portion of the insertion section,

a rotary handle which has a distal end portion and a proximal end portion, the distal end portion of the rotary handle being rotated in one plane with respect to the proximal end portion of the operation section main body[[],]; and

an opening/closing handle supported to be opened/closed with respect to the rotary handle[[],]; and

wherein the distal end portion of the rotary handle is pivotally supported on the proximal end portion of the second driving rod so that when the rotary handle is rotated in one plane in an axis of the operation section main body, the second driving rod moves back and forth in the axial direction of the second driving rod, and

wherein the rotary handle has a first operation section connecting rod which has a distal end portion and a proximal end portion, the proximal end portion of the first operation section connecting rod being supported by the opening/closing handle so that the first operation section connecting rod moves back and forth associatively with opening/closing of the opening/closing handle with respect to the rotary handle by a pivotal support which pivotally supports the opening/closing handle, and

a second operation section connecting rod which has one end portion and another end portion, the one end portion of the second operation section connecting rod being connected to the distal end portion of the first operation section connecting rod, and the other end portion being connected to the proximal end portion of the first driving rod,

wherein the rotary handle comprises a first grip which holds a finger other than a thumb, and

the opening/closing handle comprises a second grip which is pivotally supported by a pivotal support disposed not in a position where the thumb is arranged but on the proximal end portion of the rotary handle, and which holds the thumb not on the pivotal support but on the distal end portion side of the rotary handle.

27. - 33. (Cancelled)

34. (Currently Amended) A surgical instrument comprising:

first and second driving rods which are disposed side by side and each of which has distal and proximal end portions;

an operation section disposed in the proximal end portions of the first and the second driving rods, opened/closed and rotated to transmit an opening/closing force to the first driving rod, and a rotating force to the second driving rod; and

a treatment section disposed in the distal end portions of the first and second driving rods, the treatment section comprising:

a pair of jaws to be relatively opened/closed;

a support which supports at least one jaw of the pair of jaws, and pivotally supports the distal end portion of the second driving rod to move in one plane in an axis of the second driving rod;

a sliding member which is supported by the at least one jaw of the pair of jaws, and which is slid in an axial direction of the support to relatively open/close the pair of jaws; and

connection means having rigidity which connects the distal end portion of the first driving rod to the sliding member to hold a rotational state and an opened/closed state of the pair of jaws, the sliding member being supported at the distal end portion of the connection means such that the sliding member is pushed to slide in a distal direction to open the pair of jaws, wherein the distal end portion of the first driving rod comprises a circular-arc surface, and

the connection means comprises a rod member which has a distal end portion connected to the sliding member and a proximal end portion connected to the distal end portion of the first driving rod, the proximal end portion of the rod member having an abutment surface which is abutted on the distal end portion of the first driving rod having the circular-arc surface to regulate a rotational direction of the support.

35. (Original) The surgical instrument according to claim 34, wherein the abutment surface of the rod member is inclined in an axial direction of the rod member.

36. (Currently Amended) The surgical instrument according to claim [[33]] 34, wherein the sliding member comprises a circular-arc surface, and

the connection means comprises a rod member which has a distal end portion connected to the sliding member and a proximal end portion connected to the distal end portion of the first driving rod, the distal end portion of the rod member having an abutment surface which is abutted on the circular-arc surface of the sliding member to regulate a rotational direction of the support.

37. (Original) The surgical instrument according to claim 36, wherein the abutment surface of the rod member is inclined in an axial direction of the rod member.

38. (Canceled)

39. (New) A surgical instrument comprising:

an insertion section having a distal end portion and a proximal end portion, the insertion section including a first driving rod and a second driving rod disposed side by side and each of the first driving rod and the second driving rod having a distal end portion and a proximal end portion;

a pair of jaws disposed in the distal end portion of the insertion section;

a support positioned to pivotally support at least one jaw of the pair of jaws to be opened/closed relative to the pair of jaws;

a sliding member positioned to support the at least one jaw and to slide in an axial direction of the support with respect to the support to relatively open/close the at least one jaw;

a connecting rod having a distal end portion and a proximal end portion, the sliding member being pivotally supported on the distal end portion of the connecting rod to open/close the pair of jaws, and the distal end portion of the first driving rod being pivotally supported on the proximal end portion of the connecting rod;

a rotation mechanism rotatably supporting the support on the distal end portion of the insertion section, and pivotally supporting the support on the distal end portion of the second driving rod in a state of being offset with respect to a center axis of the support; and

an operation section disposed in the proximal end portion of the insertion section, and pivotally supporting the proximal end portions of the first and second driving rods when the operation section is opened/closed and rotated, an opening/closing force by the opening/closing operation being transmitted from the proximal end portion to the distal end portion of the first driving rod to slide the sliding member on the support through the connecting rod thereby opening/closing the pair of jaws, and a rotating force by the rotation operation being transmitted

from the proximal end portion to the distal end portion of the second driving rod to apply a rotational force on the support to rotate the support on the distal end portion of the insertion section, thereby rotating the pair of jaws relatively with respect to the insertion section,

wherein the sliding member has a circular-arc surface, and

a distal end portion of the connecting rod has an abutment surface abutted on the circular arc surface of the sliding member.

40. (New) The surgical instrument according to claim 39, wherein the abutment surface of the connecting rod is inclined in the axial direction of the connecting rod.

41. (New) A surgical instrument comprising:

an insertion section having a distal end portion and a proximal end portion, the insertion section including a first driving rod and a second driving rod disposed side by side and each of the first driving rod and the second driving rod having a distal end portion and a proximal end portion;

a pair of jaws disposed in the distal end portion of the insertion section;

a support positioned to pivotally support at least one jaw of the pair of jaws to be opened/closed relative to the pair of jaws;

a sliding member positioned to support the at least one jaw, and to slide in an axial direction of the support with respect to the support to relatively open/close the at least one jaw;

a connecting rod having a distal end portion and a proximal end portion, the sliding member being pivotally supported on the distal end portion of the connecting rod to open/close the pair of jaws, and the distal end portion of the first driving rod being pivotally supported on the proximal end portion of the connecting rod;

a rotation mechanism rotatably supporting the support on the distal end portion of the insertion section, and pivotally supporting the support on the distal end portion of the second driving rod in a state of being offset with respect to a center axis of the support; and

an operation section disposed in the proximal end portion of the insertion section, and pivotally supporting the proximal end portions of the first and second driving rods when the

operation section is opened/closed and rotated, an opening/closing force by the opening/closing operation being transmitted from the proximal end portion to the distal end portion of the first driving rod to slide the sliding member on the support through the connecting rod thereby opening/closing the pair of jaws, and a rotating force by the rotation operation being transmitted from the proximal end portion to the distal end portion of the second driving rod to apply a rotational force on the support to rotate the support on the distal end portion of the insertion section, thereby rotating the pair of jaws relatively with respect to the insertion section,

wherein the operation section includes:

an operation section main body having a distal end portion and a proximal end portion, through which the first and second driving rods are inserted, the distal end portion of the operation section main body being connected to the proximal end portion of the insertion section;

a rotary handle having a distal end portion and a proximal end portion, the distal end portion of the rotary handle being rotated in one plane with respect to the proximal end portion of the operation section main body; and

an opening/closing handle supported to be opened/closed with respect to the rotary handle; and

the rotary handle includes a first grip configured to receive a finger other than a thumb; and

the opening/closing handle includes a second grip pivotally supported by a pivotal support disposed not in a position where the thumb is arranged but on the proximal end portion of the rotary handle, and which holds the thumb not on the pivotal support but on the distal end portion side of the rotary handle.

42. (New) The surgical instrument according to claim 15, wherein when the insertion section and the support are arranged on the same axis, an end surface in an axial direction of the connecting rod is inclined in an axial direction of the insertion section and the support.